

Preemergence and Postemergence Herbicide Application for Weed Control in Corn at Scottsbluff, Nebraska during the 2009 Growing Season.

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A field study was initiated near Scottsbluff, Nebraska to compare the efficacy of herbicides applied preemergence and postemergence for weed control in corn. The experimental design was a randomized complete block with four replications. Plots were 11 feet wide by 40 feet long and were located on a loamy sand soil with a pH of 7.9 and 0.8% organic matter. Corn 'Pioneer 38H72' was planted on May 11. Herbicides were applied preemergence on May 11, early postemergence on June 8, and postemergence on June 16. Herbicides were applied with a tractor-mounted sprayer calibrated to deliver 20 gallons of water per acre at 32-psi pressure with Spraying System 11002 VS nozzles. Environmental conditions at the time of spraying are given in Table 1.

Corn stand when compared to the nontreated was reduced in areas treated preemergence with Corvus plus Atrazine at 0.084 plus 0.5 lb/acre (Table 2). Corvus plus Atrazine applied preemergence caused early season crop injury. Corn injury was also observed in areas treated with Balance Flexx plus Atrazine at 0.125 plus 0.5 lb/acre and Lumax at 2.46 lb/acre preemergence.

Weed density was severe and consisted of common lambsquarters, hairy nightshade, redroot pigweed, and common purslane at densities of 818, 56, 124, and 19 plants per 137 sq ft, respectively. There were multiple flushes of weeds observed in the plot area, on June 8 some common lambsquarters plants were 0.25 inch tall and some were 10 inches tall, a similar situation was observed on June 16 when common lambsquarters height ranged from 0.5 to 12 inches, hairy nightshade height ranged from 0.5 to 3 inches, and redroot pigweed height ranged from 0.5 to 7 inches. Poor common lambsquarters control was recorded in plots treated early postemergence with Laudis plus Roundup Power Max, Capreno plus Roundup Power Max, Capreno plus Ignite, and Sequence (Table 2). Poor common lambsquarters control resulted in reduced corn grain yields. Even though weed pressure was severe several weed control programs resulted in weed control of 90% or more and corn grain yields of 187 to 210 bu/acre; Corvus preemergence followed postemergence by Laudis plus Atrazine; Balance Flexx plus Atrazine preemergence followed by Ignite plus Capreno; Balance Flexx plus Atrazine preemergence followed postemergence by Laudis plus Atrazine; Lumax applied preemergence, Laudis plus Atrazine or Capreno plus Atrazine applied early postemergence; Halex GT plus Atrazine or Halex GT plus Status plus Atrazine applied early postemergence; and Sequence plus Status applied early postemergence.

Only the early postemergence treatment of Sequence plus Status would allow the grower to rotate to sugarbeets or dry beans the following growing season. Atrazine applied at 0.5 lb/acre would limit the use of many of the treatments in a rotation with dry beans and sugarbeets.

Table 1. Environmental Conditions at the Time of Herbicide Application.

Date	Air temperature	Humidity	Wind speed & direction	Time of day	Corn growth stage	Weed heights			
						Colq	Hans	Rrpw	Copu
	(F)	(%)	(mph)			----- (inches) -----			
May 11	70	44	2 SW	9:00 AM		----- No growth -----			
June 8	65	56	5 SE	3:00 PM	V3	10	0.5	2.5	0
June 16	64	56	7 NW	9:00 AM	V6	12	3	7	0

Table 2. Preemergence and Postemergence Herbicide Application for Weed Control in Corn at Scottsbluff, Nebraska during the 2009 Growing Season.

Treatment ¹	Rate	Time of application ²	Corn			
			Visual injury ³		Stand 7/1	Yield 11/30
			6/11	6/17		
	(lb/acre)		----- (%) -----			
Nontreated	--	--	0	0	34808	62.1
Corvus + Atrazine	0.084 + 0.5	PRE	7	10	34333	164.2
Balance Flexx + Atrazine	0.093 + 0.5	PRE	0	1	38372	175.9
Corvus + Atrazine	0.100 + 0.5	PRE	10	10	37066	185.9
Balance Flexx + Atrazine	0.125 + 0.5	PRE	8	4	36234	174.6
Corvus	0.075	PRE				
Laudis + Atrazine + MSO + AMS	0.123 + 0.5	POST	3	2	36353	199.2
Balance Flexx + Atrazine	0.093 + 0.5	PRE				
Ignite + Capreno + AMS	0.4 + 0.107	POST	3	1	36472	202.1
Balance Flexx + Atrazine	0.093 + 0.5	PRE				
Laudis + Atrazine + MSO + AMS	0.123 + 0.5	POST	3	3	35996	201.0
Lumax	2.46	PRE	3	7	35878	209.7
Laudis + Atrazine + MSO + AMS	0.123 + 0.5	E. POST	0	1	36828	210.6
Capreno + Atrazine + COC + AMS	0.107 + 0.5	E. POST	0	0	38966	194.3
Laudis + Roundup Power Max + Superb HC + AMS	0.123 + 0.75	E. POST	0	0	36115	162.9
Capreno + Roundup Power Max + AMS	0.107 + 0.75	E. POST	0	0	37541	154.7
Capreno + Ignite + AMS	0.107 + 0.4	E. POST	0	3	36590	154.5
Capreno + Ignite + AMS	0.071 + 0.4	E. POST	0	0	36234	140.5
Halex GT + X77 + AMS	1.97	E. POST	0	2	35878	202.9
Halex GT + Atrazine + X77 + AMS	1.97 + 0.5	E. POST	0	3	36472	203.2
Halex GT + Status + Atrazine + X77 + AMS	1.97 + 0.156 + 0.5	E. POST	0	3	35878	187.0
Sequence + AMS	1.64	E. POST	0	0	35878	114.4
Sequence + Status + AMS	1.64 + 0.156	E. POST	0	0	38135	192.4
Lumax	1.97	PRE				
Touchdown Total + AMS	0.78	E. POST	2	3	38966	200.0
LSD at 0.05	--	--	3	5	2429	36

¹Spray additives were combined with the spray solution at the following rate: ammonium sulfate (AMS) at 1.5 lb/acre, methylated seed oil (MSO) at 1% v/v, crop oil concentrate (COC) at 1% v/v, superb HC at 0.5% v/v, and nonionic surfactant (X77) at 0.25%.

²Time of application: preemergence (PRE) on May 12, early postemergence (E. POST) on June 8, and postemergence (POST) on June 16.

³Visual injury evaluated on a scale from 0 to 100 with 0 equal to no injury and 100 equal to death of the plant.

Table 2. Preemergence and Postemergence Herbicide Application for Weed Control in Corn at Scottsbluff, Nebraska during the 2009 Growing Season - Continued.

Treatment ¹	Rate	Time of application ²	Percent weed control 7/1 ⁴				Average
			Common lambsquarters	Hairy nightshade	Redroot pigweed	Common purslane	
	(lb/acre)		----- (%) -----				
Nontreated	--	--	0	0	0	0	0
Corvus + Atrazine	0.084 + 0.5	PRE	97	95	96	99	97
Balance Flexx + Atrazine	0.093 + 0.5	PRE	94	78	78	94	86
Corvus + Atrazine	0.100 + 0.5	PRE	98	98	98	99	98
Balance Flexx + Atrazine	0.125 + 0.5	PRE	75	97	65	97	83
Corvus	0.075	PRE					
Laudis + Atrazine + MSO + AMS	0.123 + 0.5	POST	99	99	99	99	99
Balance Flexx + Atrazine	0.093 + 0.5	PRE					
Ignite + Capreno + AMS	0.4 + 0.107	POST	99	99	87	99	96
Balance Flexx + Atrazine	0.093 + 0.5	PRE					
Laudis + Atrazine + MSO + AMS	0.123 + 0.5	POST	99	99	99	99	99
Lumax	2.46	PRE	93	96	95	97	95
Laudis + Atrazine + MSO + AMS	0.123 + 0.5	E. POST	98	98	76	94	92
Capreno + Atrazine + COC + AMS	0.107 + 0.5	E. POST	98	97	85	99	95
Laudis + Roundup Power Max + Superb HC + AMS	0.123 + 0.75	E. POST	35	80	67	77	64
Capreno + Roundup Power Max + AMS	0.107 + 0.75	E. POST	45	77	86	88	74
Capreno + Ignite + AMS	0.107 + 0.4	E. POST	58	74	72	89	73
Capreno + Ignite + AMS	0.071 + 0.4	E. POST	40	97	70	87	73
Halex GT + X77 + AMS	1.97	E. POST	99	99	68	47	78
Halex GT + Atrazine + X77 + AMS	1.97 + 0.5	E. POST	99	99	96	96	98
Halex GT + Status + Atrazine + X77 + AMS	1.97 + 0.156 + 0.5	E. POST	99	99	99	99	99
Sequence + AMS	1.64	E. POST	11	99	69	81	65
Sequence + Status + AMS	1.64 + 0.156	E. POST	90	99	89	92	93
Lumax	1.97	PRE					
Touchdown Total + AMS	0.78	E. POST	86	98	99	81	91
LSD at 0.05	--	--	23	21	24	20	10

¹Spray additives were combined with the spray solution at the following rate: ammonium sulfate (AMS) at 1.5 lb/acre, methylated seed oil (MSO) at 1% v/v, crop oil concentrate (COC) at 1% v/v, superb HC at 0.5% v/v, and nonionic surfactant (X77) at 0.25%.

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⁴Percent weed control calculated from weed counts taken on July 1.